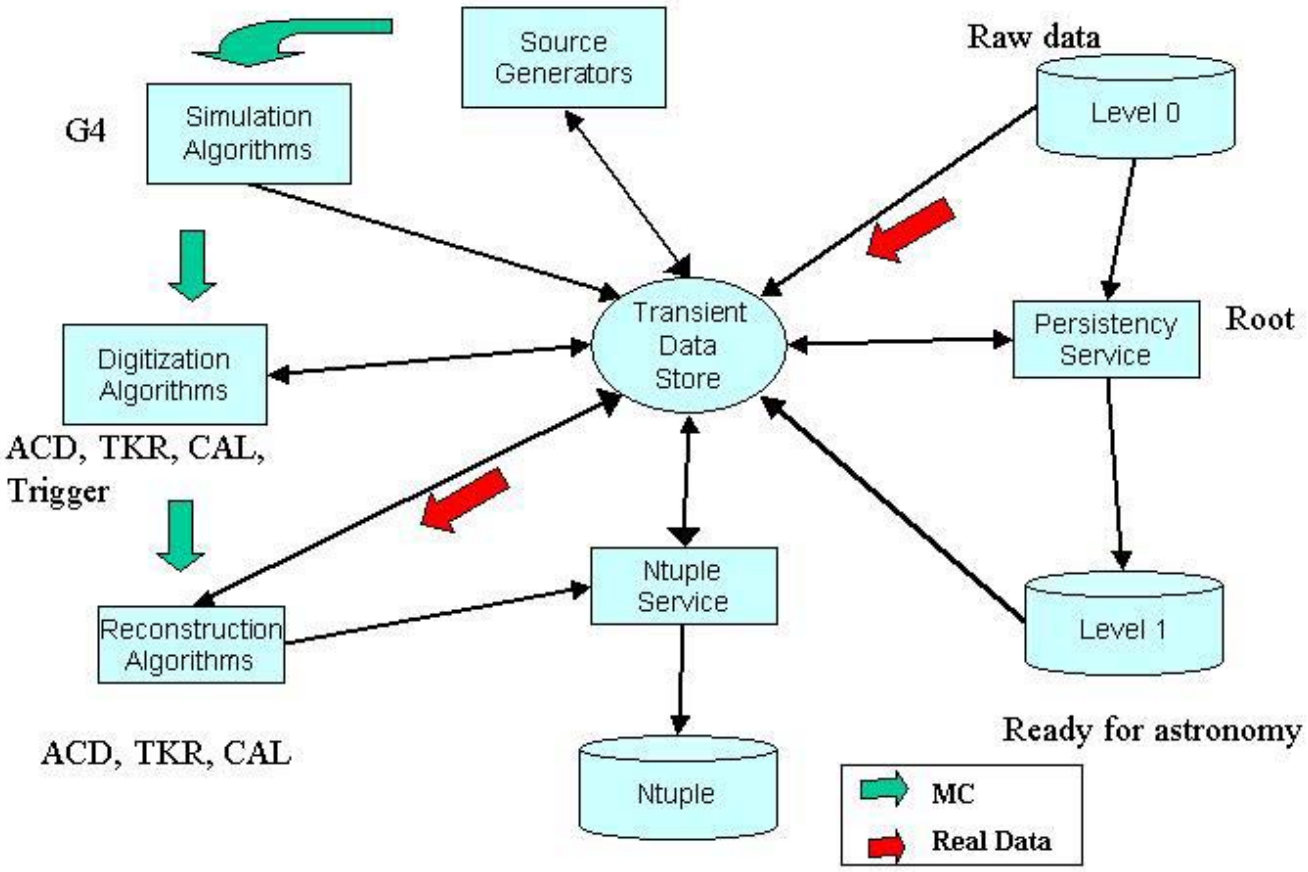
Sim/Recon Overview

- Elements of Simulation/Reconstruction
- Development, Validation & Checking
- Areas Needing Attention

Flow in Gleam



Development Model

- Standard tools
  - cvs, CMT, Visual Studio/gcc
- Release Manager
  - "continuous integration"
  - Nightly builds of release-in-progress and release-to-come
    - "tag early and often"
      - Latest tags are tested together
      - HEAD is ignored
    - Packages expected to
      - Compile and link
      - Unit test run
      - Flagged if either fail!
  - System Tests
    - Run for each Release
    - ~8 configurations of Gleam producing ~80 histograms each
    - Tracked in database; web viewable with comparisons to previous releases – attempting to auto-flag changes

Validation and Checking

- Last official performance validation was ~Nov 2002 for Gleam v3 release

  http://www-glast.slac.stanford.edu/Software/reviews/Performance/Gleam/v3/

- CAL & TKR geometry reviews done in June 2003
  - See Leon's talk

  http://www-glast.slac.stanford.edu/software/CAL/GeometryReview/CALGeomReview_agenda.htm
  http://www-glast.slac.stanford.edu/software/TKR/GeometryReview/TKRGeomReview_agenda.htm

- Sources validated this spring in Analysis Group

  http://www-glast.slac.stanford.edu/Software/AnaGroup/wren_fluxes4.pdf

- Heaviest-duty checking at the moment is from Bill Atwood in the process of doing PSF, Aeff and bkg studies

- G4 – a long story!
  - See Francesco's talk

Areas Needing Attention - 1

- Sources
  - Are we in a position to generate a day's data?
    - Able to break up day into segments
    - Able to insert transient sources
    - Point sources?
  - No known problems with background sources
  - See Toby's talk

- Particle Transport
  - Need to re-do Tune's EM physics validation of G4
  - Look at hadronic physics
  - Look at heavy ion physics
  - Need test suite and good contact with G4 team for ongoing use
  - See Francesco's talk

Areas Needing Attention - 2

- **Geometry**
  - CAL still has updates to make
  - ACD needs validation!
  - See Leon's talk
- **Digitization**
  - Update CAL for EM data results on light taper and calibration functional forms
  - Complete TKR merge of Bari/Simple Digis; incorporate any new EM knowledge
- **Recon**
  - Continuing CAL work on energy leakage and crack corrections (using Bill's currently)
  - Event shape analysis and shower up/down determination
  - Incorporation of event classification, ID and interpretation
  - Output of Level 1 information

Areas Needing Attention - 3

- Validation
  - We are still discovering errors
  - Need to include diagnostics from Bill's end-use work
  - System Tests
    - Need an iteration on the initial plots
    - More bulletproof method of flagging changes
    - Someone to champion the system!
      - Will at least partially be responsibility of new SciProg hire at SLAC
  - Very few eyes looking at Gleam!
  - We should also review unit tests to ensure they are useful
- Documentation
  - GlastRelease/Gleam User Guides etc are aging.
  - They need to be spruced up – and maybe another iteration
  - See Heather's talk

Areas Needing Attention - 4

- **Infrastructure**
  - We are still suffering with memory leaks in Root I/O
    - Ursula in Paris to restart looking this week
  - Randoms seeding seems to have broken
    - Need new owner now that Karl has left; Xin volunteering
  - We still have no user gui for post-Gleam event analysis
    - We have possible head-start with a Root gui, but have not been able to apply manpower to it

- **Pipeline**
  - OPUS pipeline looks promising, but we now need source code to adapt to our dataset database and batch system
  - Have not been able to get our hands on the code
  - Will try bringing in bigger guns to help goose the system

Upcoming Disruptions

- The usual run of upgrades
  - We ought to be able to change to gcc 3.2 shortly
    - Requires new Gaudi
    - Alex has set up test bed
    - Should be seamless this time
  - Visual .Net as default
    - Seems to be ready now
    - Transition to .Net 2003 not ready
  - New CMT is out with some nice features
    - Toby is trying them out
  - When to do these?

Summary

- **Still need to finish off the chain of event interpretation post current Recon**
- **Major challenge is validation and checking**
  - **Need to better foster verifying that things are correct and that changes don't break the system**
  - **Need to predict what we will need for DC1 operationally and test it before we need it**
    - **Good examples are reprocessing lots of events and examining them in the Event Display**
  - **Will maintain a TODO list from the Workshop to start addressing this**